

(Substitute abstract)

## ABSTRACT

A femtosecond or picosecond laser beam is split into first and second laser beams which are irradiated onto an optical fiber core at an interference angle of 90 degrees to generate a change in the refractive indices of the optical fiber core, depending on the light intensity distribution of the interference fringes, such that a grating is written in the core.

# ABSTRACT

A femtosecond laser radiation or a picosecond laser beam radiation output from light source 6 is split into a first beam and second laser beams which are reflected to an angle of 90 degrees by a beam splitter 7 and a straightly advancing second beam cut out by the beam splitter 7. The first beam is reflected at an angle of 90 degrees by a second reflecting mirror 9, reflected again at an angle of 90 degrees by a fourth reflecting mirror 11, and is collimated by a second lens 15 to be irradiated onto an optical fiber core wire 13 to be written. The second beam is reflected at an angle of 90 degrees by a first reflection mirror 8, reflected again at an angle of 90 degrees by a second reflection mirror 10, and is collimated by a first lens 14 to be irradiated onto the optical fiber core wire 13 to be written. at an interference angle of 90 degrees The femtosecond laser output from the light source 6 is split into two by the beam splitter 7, which interfere with each other in the vicinity of the core of the optical fiber core wire 13 to generate a change in the refractive indices of the optical fiber core depending on the light intensity distribution of the interference fringes, such that a grating is the gratings are written in the core 1.